

# ICTQual AB



## Qualification Specification

# ICTQual AB Level 5 Extended Diploma in Information Technology



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# ICTQual AB's

## Level 5 Extended Diploma in Information Technology

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## **Qualification Specification about**

# **ICTQual AB Level 5 Extended Diploma in Information Technology**

### **About ICTQual AB's**

ICTQual AB is a distinguished awarding body based in the United Kingdom, dedicated to fostering excellence in education, training, and skills development. Committed to global standards, ICTQual AB's provides internationally recognized qualifications that empower individuals and organizations to thrive in an increasingly competitive world. Their offerings span diverse industries, including technical fields, health and safety, management, and more, ensuring relevance and adaptability to modern workforce needs.

ICTQual AB's delivers high-quality educational solutions through a network of Approved Training Centres worldwide. Their robust standards and innovative teaching methodologies equip learners with practical knowledge and skills for personal and professional growth. With a mission to inspire lifelong learning and drive positive change, ICTQual AB's continuously evolves its programs to stay ahead of industry trends and technological advancements.

### **Course Overview**

The ICTQual AB Level 5 Extended Diploma in Information Technology is a comprehensive, advanced qualification designed to equip learners with the critical knowledge and practical skills required to excel in the rapidly evolving digital landscape. Positioned at an equivalent level to the second year of an undergraduate degree, this program provides a deep dive into core and specialized IT disciplines. Learners engage with complex technical concepts ranging from advanced software development and database architecture to network engineering and systems security. By blending rigorous academic theory with hands-on practical application, the curriculum ensures that students can confidently navigate modern technological challenges and drive innovation within any organizational context. Beyond foundational technical proficiency, this extended diploma places a strong emphasis on strategic IT management and analytical problem-solving. As the global economy becomes increasingly reliant on robust technological infrastructure, professionals must understand not only how systems operate but also how to align IT strategies with broader business objectives. This course fosters essential leadership and project management capabilities, empowering students to design, implement, and oversee complex IT solutions effectively.

## Aims of the Qualification

The primary aims of the Level 5 Extended Diploma are to:

- Deliver a thorough and advanced understanding of contemporary Information Technology frameworks, tools, and methodologies.
- Bridge the gap between highly technical computing skills and strategic business application, enabling learners to support wider organizational goals.
- Provide a recognized, structured academic pathway that facilitates progression to higher education (such as a Level 6 Bachelor's Top-up degree) or direct entry into advanced employment roles.

## Course Objectives

By the end of this qualification, learners will be able to:

- **Analyze and Design:** Evaluate complex business requirements to architect and design robust, scalable IT solutions and systems.
- **Implement Advanced Technologies:** Demonstrate technical proficiency in deploying advanced database management systems, network infrastructure, and cybersecurity protocols.
- **Manage IT Projects:** Apply industry-standard project management methodologies to plan, execute, and oversee IT projects from conception to successful delivery.
- **Problem Solve:** Utilize critical thinking and analytical research skills to troubleshoot systemic issues and evaluate the viability of emerging technologies.

## Targeted Audience

This qualification is specifically designed for:

- **Level 4 Graduates:** Students who have successfully completed a Level 4 Diploma or equivalent in Information Technology or computing and wish to advance their academic standing.
- **IT Professionals:** Current workforce members (such as systems administrators, junior developers, or technical support staff) seeking formal academic recognition and skill enhancement to step into managerial or senior technical roles.
- **Career Changers:** Individuals with a strong foundational grasp of computing who are looking for an accelerated, comprehensive credential to transition formally into the IT industry.
- **Degree-Seeking Students:** Learners looking for a cost-effective and flexible pathway to bypass the first two years of a traditional university format before completing a final-year Top-up degree.

## Certification Framework

Qualification title	ICTQual AB Level 5 Extended Diploma in Information Technology
Course ID	D&A10008
Total Qualification Time	2400 Hours
Guided Learning Hours	1200 Hours
Grading Type	Pass / Fail
Competency Evaluation	Coursework / Assignments / Verifiable Experience
Assessment	<p>The assessment and verification process for ICTQual AB’s qualifications involves two key stages:</p> <p><b>Internal Assessment and Verification:</b></p> <ul style="list-style-type: none"><li>✓ Conducted by the staff at the Approved Training Centre (ATC) to ensure learners meet the required standards through continuous assessments.</li><li>✓ Internal Quality Assurance (IQA) is carried out by the centre’s IQA staff to validate the assessment process.</li></ul> <p><b>External Quality Assurance:</b></p> <ul style="list-style-type: none"><li>✓ Managed by ICTQual AB’s verifiers, who periodically review the centre's assessment and IQA processes.</li></ul> <p>Verifies that assessments are conducted to the required standards and ensures consistency across centres</p>

## Entry Requirements

To enrol in ICTQual AB Level 5 Extended Diploma in Information Technology, learner must meet the following entry requirements:

- ✓ **Age Requirement:** Learners must be at least 18 years old at the time of enrolment.
- ✓ **Educational Background:** A Level 4 qualification in Information Technology, Computing, Software Engineering, or a related field; or a recognised Level 3 qualification with relevant IT knowledge and skills; or Equivalent international qualifications deemed comparable by the training provider.
- ✓ **Professional Experience:** Mature learners with substantial professional experience and evidence of competence may be accepted following an initial assessment or interview
- ✓ **English Proficiency:** Learners should have a good understanding of English and strong communication skills. International learners may be required to provide evidence of English language proficiency where applicable

## Qualification Structure

This qualification comprises 12 units, all twelve mandatory units, totalling 240 Credits. Candidates must successfully complete all mandatory units to achieve the qualification.

Mandatory Units	
Unit Ref#	Unit Title
D&A10008-01	Fundamentals of Information Technology Systems
D&A10008-02	Computer Networks and Communications
D&A10008-03	Database Design and Management
D&A10008-04	Software Development and Programming
D&A10008-05	Web Technologies and Application Development
D&A10008-06	Cybersecurity and Information Assurance
D&A10008-07	Cloud Computing Technologies
D&A10008-08	Systems Analysis and Design
D&A10008-09	IT Project Management
D&A10008-10	Emerging Technologies and Digital Innovation
D&A10008-11	IT Service Management and Technical Support
D&A10008-12	Information Technology Research Project

## Centre Requirements

To ensure quality training delivery, centres must adhere to the following standards:

### 1. Centre Approval

- ✓ Centres must be formally approved by ICTQual AB's before delivering this qualification.
- ✓ Approval involves a review of facilities, policies, and staff qualifications.

### 2. Qualified Staff

- ✓ **Tutors:** Must hold a Bachelor's Degree (L6) or higher in IT, Computer Science, or a related technical discipline, and possess a minimum of three years of practical, professional experience within the IT industry, such as in software development, network engineering, or systems management.
- ✓ **Assessors:** Must hold a recognized assessor qualification (e.g., CAVA, AVRA) or equivalent)
- ✓ **Internal Quality Assurers (IQAs):** Must hold a recognized IQA qualification (e.g. Level 4 Award in the IQA and Level 4 Certificate in Leading the IQA) and experience to oversee assessment standards.

### 3. Learning Facilities

Centre must offer:

- ✓ Private study areas and internet-enabled workspaces (for blended or physical delivery)
- ✓ Academic and pastoral support for learners
- ✓ Administrative support must be available to manage enrolment, tracking, and learner queries efficiently

## 4. Health and Safety Compliance

- ✓ All training facilities must comply with health and safety regulations.
- ✓ Centres must conduct regular risk assessments for practical activities.

## 5. Learning Resources

- ✓ **Course Materials:** Approved textbooks, study guides, and digital content must align with the qualification standards.
- ✓ **Assessment Tools:** Templates and guidelines must be provided to ensure standardized evaluation processes.
- ✓ **E-Learning Support:** Centres offering online or blended learning must implement an effective Learning Management System (LMS).

## 6. Assessment and Quality Assurance

- ✓ Centres must ensure assessments meet ICTQual AB's competency standards.
- ✓ Internal quality assurance (IQA) must be conducted to maintain consistency.
- ✓ External verifiers from ICTQual AB's will review assessment and training practices.

## 7. Learning Support

- ✓ **Qualification Guidance:** Support for coursework and assignments.
- ✓ **Career Pathway Assistance:** Information on progression opportunities in software development, network engineering, or systems management sectors.
- ✓ **Accessibility Support:** Accommodations for learners with disabilities or language barriers.

## 8. Policies and Compliance

Centres must uphold the following policies in accordance with ICTQual AB's standards:

- ✓ Equality, Diversity, and Inclusion Policy.
- ✓ Health and Safety Policy.
- ✓ Safeguarding and Learner Protection Policy.
- ✓ Complaints and Appeals Procedure.
- ✓ Data Protection and Confidentiality Policy.

## 9. Reporting Requirements

- Centres must provide ICTQual AB's with regular reports on learner registrations, progress, and certification outcomes.
- Assessment records must be maintained for external auditing and quality assurance purposes.

## Support for Candidates

Centres should ensure that materials developed to support candidates:

- ✓ Facilitate tracking of achievements as candidate's progress through the learning outcomes and assessment criteria.
- ✓ Include information on how and where ICTQual AB's policies and procedures can be accessed.
- ✓ Provide mechanisms for Internal and External Quality Assurance staff to verify and authenticate evidence effectively.

This approach ensures transparency, supports candidates' learning journeys, and upholds quality assurance standards.

## Assessment

This qualification is competence-based, requiring candidates to demonstrate high-level strategic proficiency as defined in the qualification units. The assessment evaluates the candidate's skills, knowledge, and understanding against the set standards. Key details include:

### Assessment Process:

- Must be conducted by an experienced and qualified assessor.
- Candidates compile a portfolio of evidence that satisfies all learning outcomes and assessment criteria for each unit.

### Types of Evidence:

- Assignments, detailed research projects, or strategic reports.
- Professional discussions.
- Candidate-produced strategic work (e.g., policy drafts, financial models).
- Recognition of Prior Learning (RPL).

### Learning Outcomes and Assessment Criteria:

- **Learning Outcomes:** Define what candidates should know, understand, or accomplish upon completing the unit.
- **Assessment Criteria:** Detail the standards candidates must meet to demonstrate that the learning outcomes have been achieved.

## Unit Descriptors

### D&A10008-01- Fundamentals of Information Technology Systems

This unit introduces the foundational architecture of modern information technology systems. Learners will explore the integration of hardware, software, operating systems, and peripheral devices. It emphasizes understanding how these core components interact to process data, manage resources, and support organizational infrastructure, providing a crucial baseline for advanced computing studies and professional technical support roles within any enterprise environment.

#### Learning Outcome:

#### Assessment Criteria:

- |   |   |
|---|---|
| <b>1. Evaluate the components and functions of modern IT systems.</b>                                       | <ul style="list-style-type: none"><li>1.1 Evaluate how different hardware, software, and network components interact with each other to support daily business operations.</li><li>1.2 Compare different IT system architectures, such as cloud-based versus on-premise systems, to determine which best fits a specific organizational need.</li><li>1.3 Analyse the functions and limitations of modern data storage and data processing components within a secure business environment.</li><li>1.4 Review the performance of an existing IT infrastructure to identify areas where system components need upgrades to improve overall efficiency.</li></ul>                        |
| <b>2. Analyse the role of hardware, software, and operating systems within organisational environments.</b> | <ul style="list-style-type: none"><li>2.1 Analyse how specific hardware configurations and enterprise software applications align to meet the strategic goals of an organization.</li><li>2.2 Compare different operating systems, such as open-source versus proprietary options, and justify their selection based on organization cost and security.</li><li>2.3 Evaluate the integration and compatibility challenges that occur when running legacy software on modern hardware infrastructures.</li><li>2.4 Interpret how the choice of operating system and software applications affects user productivity and data management across different business departments.</li></ul> |
| <b>3. Assess the impact of information technology on business operations and digital transformation.</b>    | <ul style="list-style-type: none"><li>3.1 Assess how the implementation of automated systems and digital tools changes traditional business workflows and operational efficiency.</li><li>3.2 Evaluate different approaches to digital transformation, highlighting the potential risks and benefits for various stakeholders within the business.</li><li>3.3 Explain how digital transformation expands or limits the competitive scope and market reach of a modern enterprise.</li></ul>  |

3.4 Propose clear, actionable ways forward for a business to manage the technical and cultural challenges that arise during digital change.

**4. Apply IT system concepts to solve workplace technology challenges.**

4.1 Apply IT system troubleshooting principles to diagnose and resolve complex network or software failures within a workplace scenario.

4.2 Develop multiple technical solutions for a specific workplace technology challenge, justifying the reasoning behind each approach.

4.3 Design a practical implementation plan for a chosen technology solution, taking into account workplace constraints such as budget, time, and skills.

4.4 Evaluate the success of a resolved workplace IT challenge against standard industry benchmarks to ensure long-term stability and security.

## D&A10008-02- Computer Networks and Communications

Learners will examine the principles of data communications and network engineering. This unit covers network topologies, protocols, routing, and switching technologies. By exploring both Local Area Networks (LAN) and Wide Area Networks (WAN), students develop the practical skills necessary to design, implement, and troubleshoot robust, scalable network infrastructures while ensuring efficient data transmission and reliable connectivity across enterprise environments.

### Learning Outcome:

### Assessment Criteria:

**1. Explain networking principles, architectures, and communication protocols.**

- 1.1 Explain how fundamental networking principles and architectures are applied to support complex communication needs within an organization.
- 1.2 Compare different communication protocols, such as TCP/IP and the OSI model, detailing their specific roles in ensuring reliable data transmission.
- 1.3 Evaluate the advantages and disadvantages of various network architectures, such as client-server and peer-to-peer models, for different business environments.
- 1.4 Analyse how different approaches to network design impact the overall speed, scalability, and reliability of data sharing across local and wide area networks.

**2. Design and configure basic network infrastructures.**

- 2.1 Design a functional and secure network infrastructure plan that accurately meets the specific communication and data sharing requirements of a given business scenario.
- 2.2 Configure essential network devices, such as routers and switches, to establish reliable and efficient connectivity within a localized workplace environment.
- 2.3 Justify the selection of specific hardware components, cabling media, and wireless technologies when setting up a new organizational network.
- 2.4 Evaluate the effectiveness of a newly configured network layout by testing its operational capacity and identifying any structural areas requiring improvement.

**3. Analyse network performance, reliability, and security requirements.**

- 3.1 Analyse current network performance metrics to identify potential bottlenecks and areas where data flow efficiency can be realistically improved.
- 3.2 Interpret relevant data from network monitoring tools to ensure continuous system reliability and

- proactively prevent unexpected operational downtime.
- 3.3 Evaluate the specific security requirements of an organizational network to protect sensitive business data from both external and internal digital threats.
  - 3.4 Compare different approaches to network security, such as firewalls, access controls, and encryption, and explain the reasoning behind implementing them together.
- 4. Troubleshoot common networking and connectivity issues.**
- 4.1 Apply systematic troubleshooting methodologies to accurately identify and isolate the root causes of complex network connectivity issues in a workplace.
  - 4.2 Interpret error logs, system alerts, and diagnostic data to formulate an effective way forward when resolving broadly defined network hardware or software failures.
  - 4.3 Implement practical, competency-based solutions to restore networking services promptly while actively minimizing the disruption to ongoing business operations.
  - 4.4 Review the outcomes of completed troubleshooting processes to develop preventive strategies and alternative approaches for future network maintenance.

## D&A10008-03- Database Design and Management

This unit provides a comprehensive exploration of database architecture, focusing on relational and non-relational models. Students will learn to design data structures, write complex SQL queries, and implement normalization techniques to ensure data integrity. The curriculum emphasizes practical data management, security protocols, and the strategic use of database systems to support data-driven decision-making and efficient information storage in modern organizations.

### Learning Outcome:

### Assessment Criteria:

**1. Design relational databases that meet organisational requirements.**

- 1.1 Design a comprehensive entity-relationship diagram (ERD) that accurately maps complex data relationships and business rules for a specific organizational scenario.
- 1.2 Apply database normalization techniques up to the third normal form (3NF) to remove data redundancy and ensure logical consistency within a design.
- 1.3 Evaluate different database design approaches, such as choosing specific data types and relationship constraints, to optimize long-term storage and system performance.
- 1.4 Interpret complex business requirements to correctly define primary keys, foreign keys, and referential integrity rules across all designed tables.

**2. Develop and manage database structures using SQL.**

- 2.1 Use Data Definition Language (DDL) commands in SQL to create, modify, and manage secure database structures according to a logical design layout.
- 2.2 Execute advanced Data Manipulation Language (DML) queries, including multi-table joins and aggregate functions, to extract and analyze information for business decision-making.
- 2.3 Implement database views and indexes using SQL commands to improve data retrieval speeds and manage user access permissions across different departments.
- 2.4 Troubleshoot complex SQL script errors or query failures to ensure code runs successfully without disrupting the underlying database architecture.

### **3. Evaluate data integrity, security, and backup strategies.**

- 3.1 Evaluate various database security approaches, such as role-based access control and encryption, to protect sensitive business data from unauthorized internal and external access.
- 3.2 Assess the effectiveness of different data integrity constraints in maintaining the accuracy and reliability of information across interconnected tables.
- 3.3 Compare different database backup strategies, including full, differential, and transaction log backups, to determine the most cost-effective approach for an enterprise.
- 3.4 Formulate a practical database recovery plan that details the exact steps needed to restore data integrity and minimize operational downtime following a system failure.

### **4. Implement database solutions to support business operations.**

- 4.1 Implement a fully functional relational database system within a workplace context to successfully support daily transactions and data management tasks.
- 4.2 Analyse how the implementation of a modern database solution contributes to digital transformation and improves workflow efficiency within a business environment.
- 4.3 Evaluate the operational performance and scalability of a deployed database solution against the growing data demands of a modern enterprise.
- 4.4 Produce detailed technical and user documentation for an implemented database solution to ensure smooth system maintenance and clear guidance for future upgrades.

## D&A0008-04- Software Development and Programming

Focusing on the software development lifecycle, this unit introduces foundational and advanced programming concepts. Learners will write, test, and debug code using modern programming languages. By exploring algorithms, data structures, and object-oriented principles, students build the analytical skills required to construct efficient, scalable software solutions. The unit bridges theoretical logic with practical coding, preparing learners for professional development roles.

Learning Outcome:	Assessment Criteria:
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**1. Apply programming concepts to develop software applications.**

- 1.1 Write structured and efficient source code using fundamental programming concepts, such as variables, loops, and conditional statements, to build a functional software application.
- 1.2 Implement object-oriented programming principles, including inheritance, encapsulation, and polymorphism, to create reusable and scalable software components for an organization.
- 1.3 Apply appropriate data structures and algorithms to handle data processing, storage, and manipulation requirements efficiently within a custom software program.
- 1.4 Resolve complex logical problems within a software application by breaking them down into structured, manageable programming functions or modules.

**2. Analyse software development methodologies and life-cycle models.**

- 2.1 Analyse the distinct phases of the Software Development Life Cycle (SDLC) to understand how a software application progresses from initial planning to final deployment and maintenance.
- 2.2 Compare traditional software development methodologies, such as the Waterfall model, with modern iterative approaches, such as Agile, evaluating their suitability for different project scopes.
- 2.3 Explain the reasoning behind selecting a specific project management framework, like Scrum or Kanban, to coordinate a development team's tasks and timelines.
- 2.4 Interpret how a chosen development methodology impacts software delivery timelines, team communication, and the overall management of changing user requirements during a project.

### **3. Develop, test, and debug software solutions.**

- 3.1 Develop a comprehensive test plan containing various testing techniques, such as unit testing and integration testing, to ensure all software functions operate as intended.
- 3.2 Execute systematic testing procedures to discover logical, structural, or runtime errors within an application, documenting the findings clearly in a bug-tracking log.
- 3.3 Debug identified software errors by using specialized debugging tools and techniques to trace variable states and restore correct application functionality.
- 3.4 Implement alternative coding approaches or fixes during the debugging process to prevent future software regressions and maintain long-term system stability.

### **4. Evaluate software quality, functionality, and user requirements.**

- 4.1 Evaluate a completed software solution against original user specifications to verify that all requested features and business workflows have been successfully delivered.
- 4.2 Assess software quality based on standard industry metrics, including code readability, ease of maintenance, execution speed, and user interface responsiveness.
- 4.3 Conduct user acceptance testing (UAT) to gather objective feedback on software functionality and usability from the perspective of different non-technical stakeholders.
- 4.4 Propose a clear way forward for future software enhancements or system optimizations based on a critical evaluation of current system performance and user feedback.

## D&A10008-05- Web Technologies and Application Development

This unit covers the full-stack development of dynamic, responsive web applications. Students will explore front-end languages, back-end server frameworks, and database integration. Emphasizing user experience (UX) design and accessibility standards, the curriculum equips learners with the technical skills to build secure, scalable web platforms. It prepares students to tackle modern web engineering challenges and deploy professional-grade digital solutions effectively.

Learning Outcome:	Assessment Criteria:
<b>1. Design and develop responsive web applications.</b>	<ul style="list-style-type: none"><li>1.1 Design a detailed layout and visual wireframe for a web application that automatically adjusts its structure to suit mobile, tablet, and desktop screen sizes.</li><li>1.2 Develop a functional website using flexible grid layouts and media queries to ensure smooth navigation and readable content across different device viewports.</li><li>1.3 Evaluate different design approaches, such as mobile-first versus desktop-first design, to determine which method best matches the behavior of the target audience.</li><li>1.4 Analyse how specific design choices and flexible media assets prevent layout breaking and text overlapping when a web page is viewed on diverse browsers.</li></ul>
<b>2. Apply front-end and back-end development technologies.</b>	<ul style="list-style-type: none"><li>2.1 Use front-end languages and structural markup to build an interactive user interface that effectively captures and validates user input before sending it to a server.</li><li>2.2 Implement server-side scripts and back-end programming logic to securely manage data traffic, process user requests, and control session states.</li><li>2.3 Compare different front-end and back-end technology stacks, explaining the reasoning behind choosing specific programming tools for a given project.</li><li>2.4 Troubleshoot functional errors and connectivity mismatches between client-side interfaces and server-side scripts to restore smooth data communications.</li></ul>

### **3. Integrate databases and web services into applications.**

- 3.1 Connect a web application to a structured database system to allow users to securely create, read, update, and delete (CRUD) information through a web browser.
- 3.2 Integrate external Application Programming Interfaces (APIs) or web services into an application to add extended features like live maps, weather data, or payment gateways.
- 3.3 Analyse how data exchange formats, such as JSON or XML, are correctly parsed and transferred between external web services and the internal application system.
- 3.4 Evaluate different methods for securing API connections and database queries to protect the web application from common online threats such as injection attacks.

### **4. Evaluate website usability, accessibility, and performance.**

- 4.1 Evaluate a completed web application against the Web Content Accessibility Guidelines (WCAG) to ensure it can be easily used by individuals with diverse physical or cognitive needs.
- 4.2 Assess web page loading speeds and resource usage using diagnostic tools, identifying clear ways forward to optimize code and improve overall system responsiveness.
- 4.3 Conduct structured usability tests with representative users to interpret behavioral data and pinpoint navigational difficulties within the application workflow.
- 4.4 Formulate a comprehensive enhancement plan that uses test results and performance data to improve user retention, search engine visibility, and site speed.

## D&A10008-06- Cybersecurity and Information Assurance

Learners will explore the critical principles of securing digital assets and mitigating cyber threats. This unit covers cryptography, risk management, ethical hacking, and vulnerability assessments. Students learn to design robust security architectures and implement comprehensive assurance protocols to protect data integrity and privacy. It prepares individuals to defend organizational infrastructure against evolving digital attacks and ensure compliance with security standards.

Learning Outcome:	Assessment Criteria:
<p><b>1. Assess cybersecurity threats, vulnerabilities, and risks.</b></p>	<ul style="list-style-type: none"> <li>1.1 Assess a range of modern cybersecurity threats, such as malware, phishing, and insider threats, evaluating their potential impact on specific business operations.</li> <li>1.2 Perform a comprehensive vulnerability assessment on an organizational IT system to identify weak points in network architecture or software configurations.</li> <li>1.3 Evaluate the likelihood and severity of identified security risks to prioritize which vulnerabilities need immediate attention and company resources.</li> <li>1.4 Interpret risk assessment findings to communicate complex cybersecurity threats clearly to both technical IT teams and non-technical business managers.</li> </ul>
<p><b>2. Implement security controls to protect information assets.</b></p>	<ul style="list-style-type: none"> <li>2.1 Implement appropriate physical and logical security controls, such as secure access protocols and multi-factor authentication, to safeguard sensitive organizational data.</li> <li>2.2 Configure network security defenses, such as firewalls and intrusion detection systems, to actively monitor traffic and block unauthorized access to an enterprise environment.</li> <li>2.3 Apply modern data encryption techniques to protect the confidentiality and integrity of information assets while they are being stored on servers and transmitted across networks.</li> <li>2.4 Evaluate the effectiveness of newly implemented security controls by conducting practical tests to ensure they perform reliably under a simulated cyber-attack.</li> </ul>
<p><b>3. Analyse security policies, standards, and compliance requirements.</b></p>	<ul style="list-style-type: none"> <li>3.1 Analyse the scope and purpose of internal organizational security policies in establishing clear rules and responsibilities for secure employee behavior.</li> </ul>

- 3.2 Compare different international information security standards, explaining how they provide a structured and recognized approach to managing digital risks.
  - 3.3 Evaluate the impact of legal and regulatory compliance requirements, such as regional data protection laws, on how a business is permitted to collect, store, and handle customer information.
  - 3.4 Interpret the consequences of non-compliance with industry security standards, detailing the potential financial penalties, legal actions, and reputational damage to an organization.
- 4. Develop strategies to enhance organisational cybersecurity resilience.**
- 4.1 Develop a comprehensive incident response plan that outlines the exact practical steps an organization must take to contain, investigate, and recover from a successful cyber-attack.
  - 4.2 Propose clear strategies for building a strong culture of cybersecurity awareness among all employees through targeted training and ongoing educational programs.
  - 4.3 Evaluate different business continuity and disaster recovery approaches to ensure critical IT services can quickly resume following a major network failure or security breach.
  - 4.4 Formulate a proactive, long-term way forward for organizational security that adapts to emerging cyber threats and integrates continuous system monitoring and improvement.

## D&A10008-07- Cloud Computing Technologies

This unit demystifies the architecture, deployment models, and services of cloud computing platforms. Learners will examine Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). By evaluating virtualization, resource provisioning, and cloud security, students develop the strategic expertise needed to migrate organizational data, manage scalable cloud environments, and optimize modern enterprise IT operations.

### Learning Outcome:

### Assessment Criteria:

#### 1. Evaluate cloud computing models and service architectures.

- 1.1 Compare different cloud deployment models, such as public, private, and hybrid clouds, to evaluate their suitability for various organizational structures and data requirements.
- 1.2 Evaluate the functional differences between core cloud service architectures—Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS)—regarding user management responsibilities.
- 1.3 Analyse how standard cloud-native features, like on-demand scaling and elasticity, affect an organization's resource allocation and daily operational workflows.
- 1.4 Interpret the financial and operational trade-offs between maintaining traditional on-premise hardware data centers and migrating to modern cloud-based computing solutions.

#### 2. Implement cloud-based solutions for business applications.

- 2.1 Deploy a functional cloud-based storage system or web application using a standard cloud platform, adhering strictly to a given business design requirement.
- 2.2 Configure automated resource scaling and load-balancing settings within a cloud infrastructure to keep a business application available during unexpected spikes in traffic.
- 2.3 Execute a practical data migration procedure to securely move organizational files or software services from a local system to a remote cloud environment.
- 2.4 Troubleshoot deployment errors and access permission failures encountered during the setup of a cloud environment to restore normal application functions.

**3. Assess cloud security, governance, and operational challenges.**

- 3.1 Assess specific security threats unique to cloud environments, such as shared infrastructure vulnerabilities, API misconfigurations, and data leaks, evaluating their potential impact on a business.
- 3.2 Evaluate the cloud industry's "shared responsibility model" to clearly define which security tasks belong to the service provider and which remain the responsibility of the client organization.
- 3.3 Analyse internal cloud governance frameworks and external compliance policies necessary to ensure a business satisfies regional data protection laws and privacy standards.
- 3.4 Review common operational challenges in cloud adoption, including unexpected subscription costs, hidden network fees, and vendor lock-in, proposing realistic ways to minimize these risks.

**4. Recommend appropriate cloud technologies to meet organisational needs.**

- 4.1 Gather and interpret complex business requirements regarding network performance, budget limits, and security to select the most appropriate cloud service provider for a company.
- 4.2 Develop a comprehensive cloud adoption recommendation that justifies the choice of specific cloud systems over alternative technical approaches based on business reasoning.
- 4.3 Formulate a phased cloud implementation strategy that carefully considers project constraints such as technical team skills, transition timelines, and budget boundaries.
- 4.4 Outline a clear way forward for the continuous monitoring and evaluation of the deployed cloud solution to ensure it adapts successfully to future organizational growth.

## D&A0008-08- Systems Analysis and Design

Focusing on solving complex business problems, this unit guides students through the systemic lifecycle of IT solutions. Learners will gather requirements, utilize process modeling tools, and apply agile methodologies to design efficient information systems. By bridging the gap between business needs and technical architecture, students learn to formulate functional specifications, ensuring that developed systems align perfectly with organizational objectives.

Learning Outcome:	Assessment Criteria:
<b>1. Conduct business and system requirements analysis.</b>	<ul style="list-style-type: none"><li>1.1 Gather and analyze complex business requirements from multiple stakeholders to accurately determine the scope and goals of a new information system.</li><li>1.2 Interpret current business processes to identify operational inefficiencies and document clear system requirements for a proposed technical solution.</li><li>1.3 Evaluate different methods of requirements gathering, such as user interviews and surveys, explaining the reasoning behind selecting a specific approach for an organization.</li><li>1.4 Produce a comprehensive system requirements specification document that clearly outlines both functional and non-functional needs to guide a development team.</li></ul>
<b>2. Apply system modelling and design techniques.</b>	<ul style="list-style-type: none"><li>2.1 Apply industry-standard system modelling techniques, such as Unified Modelling Language (UML), to visually represent complex software architectures and data flows.</li><li>2.2 Design detailed structural models, including use case diagrams and entity-relationship diagrams, to clearly map out user interactions within a proposed IT system.</li><li>2.3 Compare different system design methodologies, such as Object-Oriented Design and Structured Systems Analysis, to determine the most effective approach for a specific project.</li><li>2.4 Formulate a practical user interface prototype that effectively translates technical system models into a logical and accessible layout for the end user.</li></ul>

### **3. Develop technology solutions that address organisational objectives.**

- 3.1 Translate structured system design models into a functional technology solution plan that actively supports the overarching strategic objectives of a business.
- 3.2 Apply appropriate project management principles to outline how a system development process can be successfully completed within defined time and budget constraints.
- 3.3 Evaluate potential technical risks and data integration challenges that might occur when deploying a newly developed solution into an existing organizational infrastructure.
- 3.4 Implement practical ways forward to resolve conflicts or limitations that arise between the initial design specifications and the actual technological capabilities during development.

### **4. Evaluate system effectiveness and user requirements.**

- 4.1 Evaluate the operational effectiveness of a completed system by analyzing its practical performance against the original functional and business requirements.
- 4.2 Assess how well the final technology solution satisfies the diverse daily needs, accessibility requirements, and expectations of different user groups within the organization.
- 4.3 Conduct a structured post-implementation review to identify areas where the system design succeeded and where practical software improvements are still necessary.
- 4.4 Formulate a proactive maintenance and upgrade strategy to ensure the deployed system remains secure and continues to deliver high value in a changing business environment.

## D&A10008-09- IT Project Management

This unit introduces the frameworks and methodologies essential for leading successful IT initiatives. Students will explore resource allocation, risk mitigation, scheduling, and budget control using agile and waterfall methodologies. By emphasizing strategic planning and effective stakeholder communication, the curriculum empowers learners to guide complex technical projects from initial conception through to deployment, ensuring they are delivered on time and within budget.

### Learning Outcome:

### Assessment Criteria:

#### 1. Apply project management principles within IT environments.

- 1.1 Apply core project management principles to successfully coordinate the delivery of a broadly defined IT project within a modern organizational environment.
- 1.2 Compare different project management methodologies, such as Agile and traditional Waterfall, to determine the most suitable approach for specific software or hardware projects.
- 1.3 Analyse the standard phases of the IT project lifecycle to understand how technical tasks progress efficiently from project initiation to final closure.
- 1.4 Interpret the different perspectives and responsibilities of key project roles, such as the project manager, developers, and business analysts, in achieving overall project success.

#### 2. Develop project plans, schedules, and resource allocations.

- 2.1 Develop a comprehensive IT project plan that clearly outlines the overall project scope, specific technical deliverables, and sequential task dependencies.
- 2.2 Apply scheduling techniques and project management software to create a realistic timeframe that accurately tracks project milestones, phases, and final deadlines.
- 2.3 Allocate financial, technical, and human resources effectively across a project to ensure team members are utilized efficiently without exceeding the set budget.
- 2.4 Formulate alternative scheduling and resource plans to quickly adapt to unexpected technical delays, budget cuts, or changes in project scope during development.

### **3. Manage project risks, quality, and stakeholder expectations.**

- 3.1 Conduct a thorough risk assessment to identify potential technical and financial threats to an IT project, proposing practical ways forward to minimize their impact.
- 3.2 Implement quality assurance processes throughout the project lifecycle to ensure the final IT deliverables meet both organizational standards and user requirements.
- 3.3 Evaluate the diverse needs and expectations of different project stakeholders to develop a clear communication plan that keeps all parties consistently informed of progress.
- 3.4 Manage competing stakeholder perspectives and unexpected scope changes by actively negotiating solutions that keep the IT project aligned with original business goals.

### **4. Evaluate project outcomes against defined objectives.**

- 4.1 Evaluate the final outcomes of a completed IT project against the original project plan to determine if all time, cost, and quality objectives were successfully met.
- 4.2 Assess the overall effectiveness and operational value of the delivered IT solution in actively solving the specific workplace challenges it was designed to address.
- 4.3 Interpret data from post-project performance reviews to identify lessons learned, highlighting specific areas where the project management process can be improved for future work.
- 4.4 Propose a structured project closure process that ensures all technical documentation is handed over, remaining resources are released, and final client approval is officially secured.

## D&A10008-10- Emerging Technologies and Digital Innovation

Learners will investigate the transformative impact of cutting-edge technologies like artificial intelligence, machine learning, the Internet of Things (IoT), and blockchain. This unit focuses on evaluating how these innovations drive digital transformation and disrupt traditional business models. Students will analyze the ethical, social, and economic implications of adopting new technologies, fostering a forward-thinking mindset crucial for modern IT leadership.

### Learning Outcome:

### Assessment Criteria:

**1. Analyse emerging technologies and their business applications.**

- 1.1 Analyse how specific emerging technologies can be applied to solve operational problems and improve productivity within a modern business environment.
- 1.2 Compare different emerging technology trends to determine which applications offer the highest strategic value for a specific industry sector.
- 1.3 Interpret market trends and user data to identify how emerging digital tools can create completely new business models and opportunities.
- 1.4 Review the current technological setup of an organization to identify where emerging software or hardware tools can be smoothly and realistically integrated.

**2. Evaluate the impact of AI, IoT, Big Data, and Blockchain technologies.**

- 2.1 Evaluate how the implementation of Artificial Intelligence (AI) systems affects daily employee roles and decision-making processes within an organization.
- 2.2 Assess the practical impact of Internet of Things (IoT) devices on real-time data collection and operational tracking across a business network.
- 2.3 Analyse how Big Data analytics tools allow enterprises to interpret massive amounts of complex information to improve customer service and retention.
- 2.4 Evaluate the benefits and operational limitations of Blockchain technology in securing digital transactions and improving transparency across a supply chain.

**3. Assess opportunities and challenges associated with digital innovation.**

- 3.1 Assess the strategic opportunities that digital innovation creates for an enterprise looking to expand its market reach and outpace its competitors.
- 3.2 Evaluate the main technical and financial challenges, such as setup costs and system

- compatibility issues, that occur during digital innovation projects.
- 3.3 Analyse the cultural challenges of digital change, detailing how an organization can support employees and reduce resistance to new software or processes.
  - 3.4 Compare different perspectives and schools of thought on how a business should balance fast-paced innovation with strict data privacy laws.
- 4. Recommend technology-driven solutions to improve organisational performance.**
- 4.1 Recommend a specific technology-driven solution to improve a business's operational performance, justifying the choice with clear technical reasoning.
  - 4.2 Develop a practical implementation roadmap for a recommended digital solution within a broadly defined, complex workplace environment.
  - 4.3 Evaluate the potential long-term risks and benefits of a recommended technology solution against standard industry benchmarks to ensure business continuity.
  - 4.4 Formulate a clear way forward for the continuous monitoring of the implemented technology to guarantee it remains effective as business objectives change.

## D&A0008-11- IT Service Management and Technical Support

This unit focuses on the delivery and optimization of high-quality IT services using industry-standard frameworks like ITIL. Learners will explore incident management, problem resolution, and service desk operations. By prioritizing customer satisfaction and continuous service improvement, students develop the skills necessary to align IT operations with business needs, ensuring seamless technical support and reliable infrastructure maintenance within corporate environments.

Learning Outcome:	Assessment Criteria:
<b>1. Evaluate IT service management frameworks and best practices.</b>	<ul style="list-style-type: none"><li>1.1 Evaluate different IT Service Management (ITSM) frameworks, such as ITIL, to determine how they improve technical operations within a complex business environment.</li><li>1.2 Compare various ITSM best practices, explaining the reasoning behind choosing a specific framework to support overarching organizational goals.</li><li>1.3 Analyse the practical challenges a business might face when transitioning from an unmanaged IT system to a structured IT service management framework.</li><li>1.4 Interpret the scope of ITSM roles and responsibilities required to maintain a consistent, secure, and reliable technology service for end users.</li></ul>
<b>2. Deliver effective technical support and service solutions.</b>	<ul style="list-style-type: none"><li>2.1 Apply structured troubleshooting techniques to accurately diagnose and resolve complex technical support tickets for both hardware and software issues.</li><li>2.2 Deliver practical service solutions by efficiently utilizing helpdesk software to log, track, and successfully close user support requests in a timely manner.</li><li>2.3 Formulate a clear way forward to resolve recurring technical problems by creating step-by-step user guides and self-service support documentation.</li><li>2.4 Evaluate different perspectives when communicating technical solutions to non-technical staff to ensure high-quality customer service is consistently provided.</li></ul>
<b>3. Monitor and improve service performance and customer satisfaction.</b>	<ul style="list-style-type: none"><li>3.1 Analyse IT service performance using standard metrics, such as first-call resolution rates and average response times, to identify specific areas for improvement.</li></ul>

- 3.2 Evaluate customer feedback and satisfaction surveys to interpret how well the current IT support team is meeting the daily needs of workplace users.
  - 3.3 Assess the effectiveness of current Service Level Agreements (SLAs) to ensure that technical support promises align with the actual performance of the IT department.
  - 3.4 Propose practical ways forward for continuous service improvement, justifying how these changes will actively increase overall customer satisfaction and system efficiency.
- 4. Apply governance principles to manage IT service delivery.**
- 4.1 Apply established IT governance principles to ensure that technical service delivery strictly follows internal organizational policies and external compliance regulations.
  - 4.2 Evaluate the impact of formal governance frameworks, such as COBIT, on maintaining data security and professional accountability across IT support teams.
  - 4.3 Analyse how different approaches to IT governance help business managers control operational risks and ensure technology resources are used cost-effectively.
  - 4.4 Conduct a structured review of current IT service delivery processes to verify they meet legal standards, recommending practical improvements where compliance falls short.

## D&A10008-12- Information Technology Research Project

Serving as a capstone, this unit requires learners to conduct independent, rigorous research on a contemporary IT issue. Students will formulate research questions, apply academic methodologies, and analyze technical data to propose innovative solutions. This project synthesizes the knowledge gained throughout the qualification, demonstrating the student's capacity for critical thinking, complex problem-solving, and professional-level academic writing in the computing field.

### Learning Outcome:

### Assessment Criteria:

**1. Plan and conduct an independent IT research project.**

- 1.1 Develop a comprehensive research project proposal that clearly defines a complex, modern IT problem and outlines a realistic timeline for its completion.
- 1.2 Evaluate different independent research topics within the field of information technology to select one that fits perfectly within the scope and resource limits of the course.
- 1.3 Formulate a clear set of research questions and project objectives aimed at discovering new ways forward or technical solutions for the chosen technology issue.
- 1.4 Manage the research project plan independently, safely adjusting schedules and milestones as needed to overcome practical challenges during the study.

**2. Apply appropriate research methodologies and data collection techniques.**

- 2.1 Compare different research methodologies, such as qualitative, quantitative, or mixed methods, explaining the reasoning behind choosing a specific approach for the IT project.
- 2.2 Apply appropriate data collection techniques, such as online surveys, user interviews, or system performance logs, to gather relevant information safely and ethically.
- 2.3 Assess the reliability, validity, and limitations of the selected data collection tools to ensure that the gathered information is accurate and useful.
- 2.4 Evaluate different perspectives regarding research ethics, ensuring the data collection process fully respects participant privacy and regional data protection laws.

**3. Analyse and interpret research findings to address a technology-related issue.**

- 3.1 Analyse raw data collected during the research process using appropriate analytical tools or software techniques to identify clear patterns and key trends.

- 3.2 Interpret research findings in relation to existing IT concepts, standard theories, and current literature to build a deeper understanding of the technology-related issue.
  - 3.3 Evaluate the analyzed data to determine exactly how well the research findings answer the original project questions and address the core workplace problem.
  - 3.4 Synthesize the research results to propose practical, evidence-based solutions that address the technology-related challenge effectively within a business environment.
- 4. Produce and present a professional project report with justified conclusions and recommendations.**
- 4.1 Produce a structured and professional written project report that follows standard layout rules, using simple and clear vocabulary to explain complex findings.
  - 4.2 Formulate well-justified conclusions that link directly back to the interpreted research findings and the evidence analyzed during the project.
  - 4.3 Develop actionable and practical recommendations for IT professionals or businesses based on the final conclusions of the research project.
  - 4.4 Present the research findings, conclusions, and recommendations clearly to an audience, using visual aids and answering technical questions with sound reasoning.

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